Appendix E – Comments and Responses

The invasive plant management DEIS was released to the public March 21, 2015. The forty-five-day comment period closed on May 7.

We received comments from sixteen individuals, agencies, and organizations. The Department of the Interior had no comments. EPA recommended additions to the analysis or discussion in the EIS. Eight commentors supported selection of alternative 2 – invasive plant management with the inclusion of aerial spraying – with no additional recommendations. Two commentors supported alternative 2 but had concerns about, or recommendations for, the analysis. One commentor expressed concerns about the analysis. Two commentors were opposed to aerial herbicide spraying; one for human health reasons (chemical sensitivity) and the other because of resource/environmental concerns. One commentor recommended the addition of specific protection measures for bees.

Comment USDI has no comments

Response NA

Comments You should use all the technology available to fight invasive weeds. That includes new chemicals, aerial and biological.
Alternative 2 … is the best method to control large areas of invasive weeds, especially cheatgrass.
Our conservation organization supports alternative 2.
Our organization supports alternative 2.
The Thunder Basin Grazing Association encourages the Forest Service to adopt Alternative 2, the proposed alternative.
The Thunder Basin Grasslands Prairie Ecosystem Association encourages the Forest Service to adopt the proposed alternative, Alternative 2.
RMEF strongly supports Alternative 2, the proposed action.
We endorse alternative 2 as proposed by your agency.

Response NA

The Wyoming Department of Agriculture supports the Proposed Action in concept, including aerial application, but has the following concerns about the analysis:

Comment Impacts should be correlated to treatment types and their different effect on the environment. Incongruous evaluations of livestock grazing impacts to wildlife such as Canada lynx and snowshoe hare inappropriately emphasizes indirect impacts.

Analyses should be directed towards the treatment, removal or suppression of invasive plant species, and how the different treatment types will affect the surrounding environment. The FS should only analyze livestock grazing under "Management Tools" as identified in Chapter 1. Analysis of the direct and indirect impacts on wildlife and habitat should be linked to herbicides and their direct contact with species and the treatment of weed infestations.

Response NEPA requires us to disclose the impacts of our proposal. Livestock grazing is one of the adaptive management options for treating invasive species under all four alternatives, and its effects are disclosed as required. Effects of the other adaptive options – hand pulling, mowing, grubbing, tilling, biological control, herbicides, etc. – are also analyzed. NEPA also requires us to evaluate cumulative effects – the effects of our proposal added to effects from other human activities taking place in the project area. Livestock grazing is one of the activities taking place in the project area and its effects are considered in combination with activities such as timber management, recreation, road construction, and mining.

Comment WDA [Wyoming Dept. of Ag.] has concerns with Chapter 3 analyses. The current analysis seems to be directed towards impacts from other management practices/uses that are not at all related to weeds/invasive species or their control or treatment method. Chapter 3 should analyze how each alternative changes impacts based on treatment type, type of chemical, application method, LD50 levels, etc and their relation to weed/invasive species management. The only place livestock grazing should be discussed is in the instance(s) that is used as management tool for weed suppression or control.

Response The other management practices referred to in this comment are treatment options available under all alternatives.

As noted in the previous response, livestock grazing is one of the adaptive management options for treating invasive species under all four alternatives, and its effects are disclosed as required. Effects of the other adaptive options – hand pulling, mowing, grubbing, tilling, biological control, herbicides, etc. – are also analyzed.

As noted previously, NEPA also requires us to evaluate cumulative effects – the effects of our proposal added to effects from other human activities taking place in the project area. Livestock grazing is one of many activities and uses that can introduce and spread weeds or create bare areas that encourage weed establishment. The FEIS (*Native Vegetation and Invasive Species* section, *Human Activities and Invasive Species* discussion) lists numerous vectors of weed introduction and spread besides livestock: road and trail construction and maintenance, timber harvest, recreation uses and activities (hikers, pack and saddle horses, mules and llamas, pets), off-road vehicle use, irrigation ditch maintenance, wildlife species including big game animals, prescribed burning, wildfire suppression, dispersed camping, mining, energy development (wind farms, oil and gas exploration and development), and pipeline/power line construction and maintenance. The cumulative effects of these activities are analyzed and disclosed as required.

Wyoming Game and Fish Department generally supports alternative 2 with the following recommendations for consideration/inclusion:

Comment Continue to assess new, more species-specific, EPA- registered herbicides as they become available and add them to the list of approved herbicides.

Response Use of new herbicides as they become available is part of the proposed action as mentioned in the FEIS *Summary* section and chapters 1 and 2.

Comment Consider the timing, stocking rates, and the duration of livestock grazing following weed treatment. Aerial application will not be effective without proper follow-up management of livestock grazing to promote perennial, native plant recovery and re-establishment following treatment.

Response Discussions of livestock grazing adjustments following invasive plant treatments have been added to the FEIS in the *Effects on native vegetation* sections under each alternative. The following protection measure was added to appendix A under the *Livestock grazing* section:

> "Consider the timing, stocking rate, and duration of permitted livestock grazing following invasive plant treatment to optimize treatment effectiveness depending on the amount and type of treatment, treatment objectives, and site-specific conditions."

Comment Weed treatment goals of 3000-8000 should be flexible and as funding and partnerships expand, acres treated should expand.

Response As noted in the DEIS (page 11) and the FEIS (page 10), recent efforts have treated 2,000-3,000 acres annually, and aerial application would allow treatment of an estimated additional 1,000 to 5,000 acres in cooperation with state, county, and other partners. Throughout the document, the term "estimated additional" is used when discussing acres to be treated. This gives us the flexibility to treat more acres as appropriate. The range of acres was used to facilitate effects analysis.

Comment Consider using herbicides to treat post-fire weed infestations.

Response Weed treatments on MBRTB-administered lands occur annually on a case-by-case basis. Post-fire weed treatment also occurs on a case-by-case basis. Forest Service manual 2523.03 requires a post-fire assessment of burned areas after wildfires larger than 500 acres to determine if a burned area emergency exists. If necessary, the Forest Service will treat and monitor emergency stabilization measures for up to 3 years from containment of the fire to ensure the measures are functioning as planned and to evaluate the need for maintenance or retreatment. Invasive species treatment monitoring may occur for up to 1 year.

The desire to more effectively treat invasive species in burned areas (particularly cheatgrass) was one of the driving factors in proposing changes to the current weed treatment program. We currently use herbicides to treat post-fire infestations of state-listed noxious weeds, whether the fire was a wildfire or a prescribed burn. However, we

do not currently treat cheatgrass, a common invader of burned areas, because we are not authorized to utilize the most effective and selective herbicide, imazapic, or to use aerial application, which is the most effective and cost-effective application technique for rugged terrain and large areas. Alternative 2 would allow the MBRTB to treat cheatgrass in large burned areas by authorizing both the use of imazapic and aerial application techniques.

Comment Align with the BLMs current vegetation treatment plan (Final programmatic environmental impact statement vegetation treatments using herbicides on Bureau of Land Management lands in 17 western states 2007).

Response Because of the differences in scope and intent, there is not, and should not be, complete alignment between the MBRTB and BLM invasive plant treatment plans. The BLM's western states program is broad scale and treats native and non-native vegetation. The MBRTB analyzes proposed treatment for non-native invasive species and is limited to the Medicine Bow and Routt national forests and the Thunder Basin National Grassland.
BLM's current vegetation treatment plan is guided by two programmatic documents: an EIS and an environmental report. The EIS deals only with herbicide treatments. The environmental report describes vegetation treatments already authorized by other laws, regulations, and decisions: The two BLM documents have many similar features to the MBRTB assessment, but they also differ in some significant ways.
The BLM EIS is programmatic and covers an area encompassing 9 ecoregions; it does not directly authorize project implementation. It is intended to be supplemented with analyses at the regional, district, resource area, or local scale before a project can be implemented. As the EIS states; "Site-specific impacts would be addressed in NEPA documents prepared by local BLM offices and tiered to this document." The intent for the MBRTB EIS is to amend and directly authorize the invasive weed treatment program on the MBRTB.
The BLM EIS and programmatic report include other types of vegetation treatments beside invasive non-native plant species. They include treatment of native vegetation to reduce tree density, removing ladder fuels, reducing crown bulk density, altering tree species composition in favor of fire-resistant tree species, and to regenerating aspen where it has been encroached by coniferous tree species. That is a much broader range of vegetation treatments than proposed in the MBRTB EIS. The MBRTB limited its analysis to non-native invasive plant species.

Comment More specific discussion on integrated invasive plant treatment prescriptions. Define how the prescriptions will be formulated on a project-by-project basis.

Response It is the weed management system that is integrated, rather than individual prescriptions for treatments of infestations. Integrated management uses a variety of weed prevention and weed treatment methods to maximize effectiveness while minimizing negative effects to other resources.
Treatment of an infestation may utilize only one of the methods available under integrated management if it provides good control at a reasonable cost and minimizes

impacts to people and the environment. In some situations, several treatment methods may be used to contain or control an infestation. For example, an infestation that occurs on uplands as well as near water might be treated using two or more methods. Herbicide treatment might be used on the upland site, while biological control (if available), hand-pulling, grubbing or targeted grazing might be used near the water. The decision flow chart (Figure 2 in the EIS) diagrams how a treatment prescription for an infestation would be selected, based on the type of weed, its location, size of infestation and other environmental concerns. The FEIS describes the various components of adaptive and integrated weed management in chapter 2, table 2, in chapter 3 under *Direct and Indirect Effects Common to All Alternatives*, in tables 9 and 10; and in appendix C which identifies example treatments for each target invasive plant species using the integrated management tools available.

Comment Include specifications for pre- and post-treatment monitoring and the protocol for determining the need for follow-up treatments.

Response Monitoring and record-keeping are discussed in chapter 2 in the *Features Common to all Alternatives* section. Monitoring is also a component of some resource protection measures in appendix A (see pages A-3, A-5, and A-11).

Comment Analyze junipers and conifers as invasive plants.

Response Undesirable plants on the MBRTB are defined in the *Background* section of the FEIS. Table 1 lists the thirty-four invasive plants to be treated. Conifer encroachment is done as part of forested vegetation management and would be analyzed at the project level.

Comment Include a more robust discussion of big game species and habitat in the wildlife section of chapter 3.

Response Effects of cheatgrass on existing big game habitat are discussed in the *Summary* section and on pages 9, 10, 24, 45, and 134 of the FEIS.

Comment Analyze the potential of disease transfer from domestic sheep to bighorn sheep due to the effects of grazing as a control method for invasive plants in each of the alternatives.

Response In appendix A, protection measures have been added to minimize the potential for interaction between bighorn sheep and domestic sheep or goats used for weed control (appendix A, *Livestock grazing* section).
As noted in the FEIS, sheep and goats would be a viable weed control option only in limited locations.

> "*Due to the need to closely confine livestock used in weed control, to protect them from predation (in the case of sheep and goats), and to apply grazing two or more times per growing season, grazing treatments are likely to be used on small areas for most weed species.*"

EPA recommended the following additions to the analysis/discussion:

Comment Revegetation after cheatgrass control measures are applied –consider the availability of seeds and other materials needed for revegetation when scheduling and locating aerial spraying. Are there times/conditions during the year when revegetation is more likely to be successful? Are special revegetation considerations needed during drought years or wet years?

Response The proposed action includes revegetation as part of integrated invasive species management (FEIS pgs. 18, 19, 22, 30, 48).
Appendix A (pg. A-9) has the following resource protection measure: *"Where noxious weeds or other harmful invasive plant species are present on a project site or near enough to pose a threat of colonizing disturbed areas, seed the disturbed area with approved plant materials as specified in the MBRTB Revegetation Guidelines."*
This protection measure applies not only to disturbed sites from various natural and human-caused events such as burns, construction, and landslides, but also to aerial treatment of a cheatgrass site with resulting low residual plant cover. Sites treated with herbicide are considered disturbed sites if the native plant community is disrupted or depleted to the point where erosion is accelerated and weed establishment is likely.
Drought is difficult to predict. A year may start out green and wet, only to turn hot and dry, and the reverse may happen. We have seen both situations in recent years. However, we do consider weather conditions and time of year in any revegetation effort, whether it follows weed spraying or other disturbances, in order to maximize success.

Comment The adaptive management plan needs to evaluate the effectiveness of the proposed strategy (Alternative 2) every 2 to 3 years to make necessary adjustments. For example, reestablishment rates of native sagebrush, grasses, etc. will be important in order to prevent re-infestation of cheatgrass and other noxious weeds.

Response Monitoring and record keeping are part of all four alternatives as described on page 14 of the FEIS. Monitoring is also discussed on page 16.

Comment The adaptive management plan should have the flexibility to add new herbicides as they become registered for use.

Response Use of new herbicides as they become available is part of the proposed action as mentioned in the *Summary* section and chapters 1 and 2.

Comment — We [EPA] recommend the Final EIS note that NPDES (surface water) discharge permit may be needed for larger applications of herbicides, for application areas that include or are near "Waters of the US." General NPDES permits have been developed to cover most major pesticide application activities.
For coverage under a general permit, typically the applicator must submit a notice of intent (NOI) to discharge pesticides to the NPDES permitting authority: EPA for Colorado and the Wyoming DEQ. (http://deq.state.wy.us/wqd/WYPDES Permitting/)

Response — The Routt National Forest has an NOI for pesticide discharges (NPDES general permit) on file with EPA dated 11/29/2012; and the Medicine Bow National Forest and Thunder Basin National Grassland have an NOI for pesticide discharges on file with WYDEQ dated 10/08/2010. These permits are valid for five years. Permits will be renewed as necessary during project implementation. The general permit renewal process is done online at the following websites:
Colorado - http://www.epa.gov/npdes/pubs/final_pgp.pdf
Wyoming - http://deq.state.wy.us/wqd/WYPDES_Permitting/
WYDEQ NOI forms can be downloaded online, but the NOI must have an original signature and it can be either mailed or hand-delivered to WYDEQ.

Comment — Adopt alternative 4 – no herbicide use. If alternative 4 is not adopted, use the proposed minimum area of herbicide spraying (map attached to the comment) to avoid life-threatening health issues exacerbated by extreme chemical sensitivity. The Smiths and their son, Alexander, have extraordinary sensitivity to chemical agents. Legal standards require the Forest Service to consider practicable alternatives that are proposed. The Smiths propose excluding 7,880 acres from the area proposed for herbicide spraying, both manual and aerial. The exclusion would provide a buffer zone for the Smith property. According to Dr. Rhea [the Smith's physician], "Most pesticide applications leave a toxic residue that remains for weeks or months gradually releasing toxic chemicals into the surrounding environment." The persistence of nearly all sprayed herbicides provides an underlying rationale for the proposed alternative.

Response — The following protection measure was included in the record of decision (attachment 1) and in appendix A of the FEIS:
Notify the landowners 24 hours before ground spraying within 65 feet or aerial spraying within 300 feet of their property located at T14N, R77W, sections 12, 13, 7, and 18. The twenty-four hours' notice is to maintain consistency with the notification requirements for the sensitivity registry maintained by the Colorado Department of Agriculture:

> "The registry does not prevent application of pesticides but only requires that commercial applicators (like lawn care companies) notify people on the registry 24 hours before an application is made to abutting property (property that touches yours) so that you can leave for a period of time or make other preparations for the application."
> (http://www.colorado.gov/cs/Satellite/ag_Plants/CBON/1251623464779)

Forest Service manuals and handbooks do not provide any guidance or requirements for individuals with documented chemical sensitivity; neither does the state of Wyoming.

Sixty-five feet is the recommended minimal buffer zone for aerial spraying applications in the Missoula Valley. Buffer zones for ground spraying are less than 65 feet (Felsot 2001). Three hundred feet is the minimum buffer for aerial application around campgrounds, recreation residences and private residential areas from appendix A – Protection Measures, page A-16.

The Forest Service has been treating weeds on national forest system lands, including areas within the proposed herbicide exclusion zone, for the past 10 years or more. The area proposed for exclusion is approximately 8,020 acres. Within the proposed exclusion zone, there are infestations of Dalmatian toadflax around the town of Albany, around Lake Owen, and along the rails-to-trails trail (Pers. comm. with Aaron Swallow, 2014).

The July 2014 Owen Fire burned approximately 397 acres in the proposed exclusion zone. The fire was north of Lake Owen in sections 23, 24, 25 and 26. According to the post-fire, burned area assessment report (BAER), cheatgrass, Canada thistle, musk thistle, and yellow toadflax were documented near the burned area. Cheatgrass invasion could create large-scale and possibly irreversible degradation to landscape appearance and ecosystem function. Thistle and toadflax populations have increased following other fires in the area so populations may increase after the Owen fire as well (BAER 2014). Annual weeds like cheatgrass or medusahead are able to take advantage of the flush of available nitrogen and can dominate plant communities after a fire (Haas 2014). The BAER recommends inspecting the area in the fall of 2014 to determine the presence of cheatgrass, Canada thistle, musk thistle, and yellow toadflax and treating the area in the fall or spring to control or contain these invasive plants.

The application of straw mulch and/or grass seed (even certified noxious weed free seed) in post-burn rehabilitation measures increases the likelihood of cheatgrass seed introduction (Haas 2014). The BAER recommends hand application (or chipping from road) of straw or wood mulch and straw wattle installation in portions of a 6-acre contributing drainage area around Lake Owen (BAER 2014).

The Cheyenne Board of Public Utilities manages the aqueduct that runs through the Smith's proposed exclusion zone. Our agreement with them grants them an easement to access and manage the aqueduct. Noxious weed control is a requirement in the easement. (Pers. comm with Patricia Hesch, 2014). There is oxeye daisy along the aqueduct and possibly also Dalmatian toadflax, musk thistle, and Canada thistle.

Canada thistle, Dalmatian toadflax, and oxeye daisy are all rhizomatous weeds that are very difficult to treat effectively by mechanical, cultural, or biological means. There are biological control insects on the market for these species, but they have not been shown to be effective in containing or eradicating the infestations. Targeted grazing could be used for Canada thistle and perhaps musk thistle but not for oxeye daisy or

Dalmatian toadflax as they are not palatable to livestock. Mowing would not be an effective control method for Canada thistle, Dalmatian toadflax, and oxeye daisy since the plants can spread readily via rhizomes when not able to produce seed. Mechanical treatment (digging out the roots) could be applied to any of the species but would result in ground disturbance and more time and money spent on control. This would mean fewer acres of weeds treated forestwide. The ground disturbance associated with digging out roots would invite reinfestation by invasive species if weather conditions were not suitable for establishment of desirable native species.

An area south of the proposed herbicide exclusion zone burned in the Squirrel Creek Fire several years ago and has some areas heavily infested with cheatgrass. Most of the burned area is within forest-plan-designated crucial deer and elk winter range or the Sheep Mountain Wildlife Area. Laramie District has plans to treat this cheatgrass aerially if the proposed action is chosen.

The proposed herbicide exclusion zone includes about 1,250 acres of crucial deer and elk winter range. These acres are vulnerable to cheatgrass infestation following a wildfire because of site characteristics and the proximity of a large reservoir of cheatgrass seed. Failure to effectively treat cheatgrass would reduce the value of the area for wintering big game species.

Further, the town of Albany constitutes an Urban Interface Zone, and if a wildfire left a legacy of cheatgrass on the NFS lands around the town, we would want to treat it to reduce the likelihood of a recurring fire fueled by highly flammable cheatgrass.

In their risk assessment for each herbicide, SERA considered persistence on vegetation in their chronic exposure scenarios of long-term consumption of contaminated fruit or vegetation.

> *"In most Forest Service risk assessments, the concentration of the pesticide on contaminated fruit and vegetation is estimated using the empirical relationships between application rate and concentration on different types of vegetation (Fletcher et al. 1994). This is identical to the approach used by U.S. EPA/OPP (2005a). For chronic exposures, both initial concentrations and a halftime on vegetation are required to estimate the time-weighted average exposure." (SERA 2006)*

The results of the chronic and acute exposure scenarios for each herbicide are reported in FEIS table 23 with additional discussion following the table for herbicides that exceed EPA's chronic or acute exposure reference dose (RfD).

Comment The DEIS analysis is flawed. The DEIS does not adequately consider the issues of effects to human health.

Response The human health and safety specialist report has been updated to include additional discussion about effects to sensitive subgroups. This discussion has been added to the FEIS.

Comment The effects of herbicides on human health are relegated to issue #4 and given little attention.

Response The following language has been added to the final EIS under the Issues discussion in chapter 1:
"The assignment of numbers to the following issues is arbitrary; it does not imply an order of importance."

Comment The herbicide use in alternatives 2 and 3 would have actual, not potential, impacts, exposures, and doses.

Response "Forest managers frequently make decisions regarding the use of pesticides on forest lands. These decisions must be based not only on the effectiveness of these tools, but also on an understanding of the risks associated with their use. For the pesticides commonly used by the Forest Service in its management activities, Human Health and Ecological Risk Assessments (HERAs) are prepared. In these documents, the process of risk assessment is used to quantitatively evaluate the probability (i.e. risk) that a pesticide use might pose harm to humans or other species in the environment. It is the same assessment process used for regulation of allowable residues of pesticides in food, as well as safety evaluations of medicines, cosmetics, and other chemicals." http://www.fs.fed.us/foresthealth/pesticide/risk.shtml

Comment The protection measures in appendix A reflect a superficial analysis of the effects on human health and they are meaningless to the Smiths.

Response The following protection measures in appendix A address human health. Table A-1 contains additional protection measures by herbicide. In addition, the human health report and the FEIS have been updated to include additional discussion about effects to sensitive subgroups.

Ground-based herbicide application - general

- Herbicides will be used in accordance with U.S. Environmental Protection Agency label instructions and restrictions. Label restrictions on herbicides are developed to mitigate, reduce, or eliminate potential risks to humans and the environment. Label information and requirements include: personal protective equipment; user safety; first aid; environmental hazards; directions for use; storage and disposal; general information; mixing and application methods; approved uses; weeds controlled; and application rates. It is a violation of federal law to use an herbicide in a manner inconsistent with its labeling.
- Additional herbicides may be considered for use within the project area in the future. Only EPA registered herbicides having a completed risk assessment will be considered for use.
- Adhere to all guidelines and protection measures in the Forest Service Manual 2150, Pesticide Use Management and Coordination, and in the Forest Service Handbook 2109.14, Pesticide Use Management and Coordination Handbook.

- Procedures for mixing, loading, and disposal of pesticides and a spill plan would be followed (Label and FSH 2109.14, 43). All herbicide storage, mixing, and post-application equipment cleaning is completed in such a manner as to prevent the potential contamination of any perennial or intermittent waterway, unprotected ephemeral waterway or wetland. Herbicide applicators shall carry spill containment equipment, be familiar with and carry an Herbicide Emergency Spill Plan.
- In occupied public recreation areas (such as developed campgrounds, trailheads, other areas of concentrated use) post notification of treated area until the area is safe to re-enter (as defined by the product label, usually 12 to 48 hours).

Water resources

- Follow herbicide label restrictions regarding use near functioning potable water sources. Herbicides can have varying setback restrictions near functioning/active potable water intakes. For example, labels of glyphosate products registered for aquatic weed control state: "Do not apply this product in flowing water within 0.5 mile up-stream of active potable water intake".
- Ground herbicide terrestrial applications will maintain a 50 foot buffer of all water sources/wellheads unless the formulations are approved for "in or near water".
- In areas at high or unacceptable risk to groundwater contamination, use hand applications (spot treat, wick, etc.), or for broadcast application do not use clopyralid, dicamba, hexazinone or picloram.
- Locate vehicle service and fuel areas, chemical storage and use areas, and waste dumps and areas on gentle upland sites. Mix, load, and clean on gentle upland sites. Dispose of chemicals and containers in State-certified disposal areas. (Watershed Conservation Practices Handbook FSH 2509.25 – R2 Amendment 2509.25-2006-2)
- During use periods, inspect chemical transportation, storage, or application equipment for leaks. If leaks occur, report them and install emergency traps to contain them and clean them up. Refer to FSH 6709.11, chapter 60 for direction on working with hazardous materials. Report chemical spills and take appropriate clean-up action in accordance with applicable state and federal laws, rules and regulations. Contaminated soils and other material shall be removed from NFS lands and disposed of in a manner according to state and federal laws, rules, and regulations. (Watershed Conservation Practices Handbook FSH 2509.25 - R2 Amendment 2509.25-2006-2)
- Apply chemicals using methods that minimize risk of entry to surface and ground water. Favor pesticides with half-lives of 3 months or less when practicable to achieve treatment objectives. Apply at lowest effective rates as large droplets or pellets. Follow the label directions. Favor selective treatment. (Watershed Conservation Practices Handbook FSH 2509.25 - R2 Amendment 2509.25-2006-2)

Response, cont.

Aerial application

- All aviation activities will be in accordance with FSM 5700 (Aviation Management), FSM 2150 (Pesticide Use Management and Coordination), FSH 5709.16 (Flight Operations Handbook), FSH 2109.14, 50 (Quality Control Monitoring and Post-Treatment Evaluation). A project Aviation Safety Plan will be developed prior to aerial spray applications.
- Provide a minimum buffer of 300 feet for aerial application of herbicides from developed campgrounds, recreation residences and private residential areas (unless otherwise authorized by adjacent private landowners). Treat outside of high use periods where feasible. Temporary closures of campgrounds may be considered to ensure public safety during spray operations.
- Signing and on-site layout would be performed one to two weeks prior to actual aerial treatment.
- Temporary area and road/trail closures would be used to ensure public safety during aerial spray operations.
- Constant communications would be maintained between the aircraft and project leader during spraying operations. Ground observers would have communication with the project leader. Observers would be located at various locations adjacent to the treatment area to monitor wind direction and speed as well as to visually monitor drift and deposition of herbicide.
- Herbicides that contain the surfactants POEA (polyoxyethyleneamine) or MON-0818 (polyoxyethylene tallowamine) will not be aerially applied.

Measures to reduce drift

- Aerial spray units would be field-validated, flagged, and/or marked using GPS prior to spraying to ensure only appropriate portions of the unit are aerially treated. To ensure that aerial treatments stay within intended treatment areas, units will be GPSed before and during the flight.
- A field inspector will be present during all aerial application to monitor drift using spray detection cards placed in buffer areas. Cards will be placed prior to herbicide application and will be sufficient in number and distribution to adequately determine when drift of herbicide into the buffer area exceeds acceptable levels. Non-toxic dye would be added to make herbicide visible on spray cards. Dye would allow observers to see herbicide as it is sprayed and to visually monitor drift or vortices from boom and rotor tips.
- Drift reduction agents, nozzles that create large droplets, and special boom and nozzle placement, would be used to reduce drift during aerial spraying.
- Drift control agents may be used in aerial spraying during low humidity to reduce drift into non-target areas. Products that reduce volatility, have been shown to keep droplet sizes larger, and are appropriate adjuvant for the herbicide (as specified by labeling of both the herbicide and the drift agent, in consultation with the herbicide manufacturer) would be used.

Response, cont.

- Aerial spraying will be discontinued if herbicide is drifting within the set-back zone and/or wind speed exceeds those recommended on the product's label.
- Weather conditions would be monitored on-site (temperature, humidity, wind speed and direction), and spot forecasts would be reviewed for adverse weather conditions.
- Maintain boom pressure at less than 40 psi and use nozzles designed for medium to coarse droplet size (240 to 400 microns). Use a drift agent to help maintain large droplet size.
- Monitor treatment boundaries next to sensitive areas with spray deposit cards to detect any possible drift. Train people in how to handle the cards, interpret the cards (many things can contaminate the cards such as dew, moisture from hands, insects) and also document results. Card lines should also be placed in treated areas under full spray to serve as a reference.

Water resources

- During contract preparation for aerial application, reassess surface water quality risk with site-specific information. Once the exact treatment areas are delineated in preparation for the contract, determine treatment acres for 6th hydrologic unit code (HUC) watersheds potentially affected by aerial application if picloram is used. Incorporate these acres into the risk assessment to estimate probable herbicide concentrations and allowable treatment acres. If concentrations of picloram exceed the recommended safe threshold, reduce treatment acres to the allowable amount or use herbicides approved for use near surface water.
- On each side of aquatic, streamside or wetlands areas, a 300-foot buffer would be established where aerial applications would not be allowed.

Comment

Aerial spraying of herbicides is unnecessary. It is inappropriate and unnecessary, and is likely to be harmful to native plants. The DEIS seems very biased in favor of aerial spraying by exaggerating its effectiveness, minimizing its adverse impacts, and greatly overstating the adverse impacts if it is not used.

Response

Aerial application of herbicide is only proposed for use where the size of the infestation is so large or the terrain so rugged that ground-based application could not be implemented or would be prohibitively expensive (thus preventing treatment). On the mountain districts, many of the worst cheatgrass infestations are on slopes of 40% or greater and/or on very rocky sites. Neither truck-mounted nor OHV-mounted sprayers can negotiate such terrain. Workers on foot with backpack sprayers might be able to carefully walk such slopes but would not be able to apply the herbicide evenly. With Plateau (imazapic), the herbicide proposed for aerial application, the application rate is only about 6-8 ounces per acre for most rangeland applications.

Response, cont.

A worker walking back and forth on a steep hillside, carrying a heavy liquid-filled backpack and walking around scattered scree, boulders, or rock outcrops would not be able to apply the herbicide at the even rate necessary to avoid missing some cheatgrass areas and over-treating others, with resultant mortality to non-target native plants.It would also not be a safe work environment for the worker and could result in injuries from falls and herbicide spills.

Even on gentle terrain, a vehicle-mounted sprayer driving over and around rocks, holes, large shrubs, etc., would not evenly apply the herbicide. Aerial application using GPS-guided spray technology results in much more even application of the herbicide and therefore more uniform coverage and application rates that meet specifications over the entire area.

Missed swaths of cheatgrass would quickly repopulate the treated area within a few years. For gentler terrain infested with cheatgrass, such as on the Thunder Basin National Grassland, the acreage is so large that only part of an infestation could be treated under normal budget situations. Ground-based application is at least three times as expensive as aerial application (BLM EIS – Vegetation Treatment Using Herbicides on Bureau of Land Management Lands in 17 Western States). This means in any given year, the MBRTB could treat 3 times as many acres of cheatgrass using aerial application. Partial treatment of a large infestation usually means that seed from the untreated portion will re-infest the untreated area in a few years.

Application of herbicides can cause harmful effects to native plants; however, the selectivity of herbicide proposed for aerial application means that many species will not be adversely affected. Timing of application and selection of an appropriate application rate and surfactant (or no surfactant used) further reduce adverse impacts to non-target plant species.

Comment

Ground spraying is more labor intensive, but it also better targets the undesirable plants. It can also prevent the accidental spraying of sensitive plants in the family poaceae. Id. at 63.

Response

As discussed in the EIS, alternative 2, integrated pest management section, reliance on one method or restricting use of one or more tools may prove less effective. Effectiveness and applicability of each tool vary and depend on invasive plant biology and ecology, location and size of the infestation, environmental factors, management objectives, and management costs. EIS table 3 lists the situations in which ground-based herbicide treatment would be emphasized.

Appendix A contains extensive protection measures (pages A-4 through A-9) for threatened, endangered, proposed, and sensitive plant species, including herbicide-specific buffers for ground and aerial spraying.

Comment

The Forest Service should apply livestock grazing to large patches of cheatgrass. Livestock grazing, properly managed, is well suited for large areas with a heavy cheatgrass cover and density, where there is less concern about harm to native plants. Since the greatest concern about cheatgrass is on the Grasslands livestock grazing,

which already occurs on much of the Grassland, would be a good control method to use against cheatgrass, though other methods might still be needed. Grazing would have to be monitored regularly to prevent stock from overgrazing desirable vegetation and from creating bare ground or compacted soils, conditions that would favor weed spread.

Response

Grazing is part of integrated invasive species management under the proposed action (FEIS pages 18 and 19);

Table 5 (FEIS page 30) shows the maximum acres that could be treated annually using grazing or browsing – 250 acres for alternatives 1, 2, and 3 and 200 to 500 acres under alternative 4.

Table 10 (FEIS pages 39 and 40) discusses current use of livestock grazing for weed control on the MBRTB. Use of livestock grazing to control invasive species is also discussed on page 43.

As noted in the FEIS on page 45, if aerial treatment of cheatgrass is not available, livestock grazing is the only other treatment that could be applied to large cheatgrass patches. It can only be used on parts of the TBNG and small, low elevation patches on the Medicine Bow and Routt national forests. On the forests, grazing would not be a feasible treatment for large cheatgrass patches on steep or broken terrain (many of them on big game winter range sites) so cheatgrass would continue to spread into suitable habitats. On the TBNG, grazing as a treatment option for cheatgrass is limited by the following economic and practical considerations:

- The grassland includes some steep terrain, such as in the Spring Creek Unit, where cattle will seldom willingly graze. Cattle would have to be closely confined on steep sites, which would require provision of water and secure containment – both difficult on steep slopes.
- Cheatgrass has a short palatability period – 2 to 3 weeks – before the seed heads fully develop and start to cure. Most pastures on TBNG are large and, in order to ensure that cattle only grazed the portion that is infested with cheatgrass, temporary fencing and perhaps temporary watering areas would have to be set up. Cattle would then need to be rounded up and trailed to the cheatgrass control site. All these preparations require a relatively large investment of time and money by the livestock owner and the Forest Service for a very short grazing period. It would be difficult to enlist livestock operators in this type of weed control program.
- If the infestation were very large, it might require more cattle than normally graze a given allotment or pasture to achieve a satisfactory level of cheatgrass use in the brief period of cheatgrass palatability. Livestock from several owners would need to be run together in the cheatgrass control area to achieve the necessary herd size. Many livestock owners are unwilling to mix their livestock with other's stock due to a variety of concerns including crossbreeding among differing breeds or lineages of cattle, disease exposure, and extra stress to the stock when the cattle must be sorted.

Response, cont.

- Confinement of livestock to a monoculture of cheatgrass can result in a decline in livestock condition. That is a sacrifice many livestock owners are not willing to make, as it can affect health of breeding stock or economic return from marketed animals.
- If livestock are confined on an infestation site that still contains some remnant desirable native plants, it is likely many of those desirable plants will be heavily grazing and/or trampled by the livestock before the majority of the cheatgrass has been consumed. Many desirable forage plants on the TBNG, such as needle and thread, green needlegrass, western wheatgrass and threadleaf sedge have reached grazeable height when cheatgrass is in its palatable stage.
- Livestock seldom uniformly graze a pasture in which they are confined unless forced to by a lack of feed. Scattered patches of cheatgrass not grazed by the livestock (such as where it has been trampled or around manure piles) can produce such large quantities of seed that the treated area can be re-infested within a few years.
- In years when moisture is sufficient, cheatgrass can produce additional seed heads after livestock have been removed from the infestation site.

FEIS page 48 notes that using grazing or ground application of imazapic to treat cheatgrass would only result in a few areas being treated, and cheatgrass would likely increase in extent and density as a result.

A review of the use of livestock to control cheatgrass (Vallentine and Stevens 1994) concluded that, with limited exceptions, grazing is not an effective general tool for cheatgrass control. Haferkamp (2003) concluded that, “Uniformly defoliating brome plants with grazing or mowing and precisely timing defoliation to reduce selection of perennial grasses and allowing the perennials adequate time to recover from defoliation before the end of the growing season is not easily accomplished on any rangelands. Unfortunately, terminating grazing or mowing when soil water is available for growth of associated perennial grasses may also prove advantageous for annual bromes. It is unlikely all annual brome pants and shoots will be grazed. Consequently, some annual brome plants will always be present to produce viable seed and replenish the seed bank.”

To be effective and not damage or conflict with other resource values, sheep and goats used for weed control have to be closely confined on the infestation area, have access to water, be protected from predators and be closely monitored so they can be removed if they start to damage desirable native plants. It is not always possible to find contractors able to cope with these logistics (especially on steep ground with no water source nearby) and provide the necessary level of oversight. Sheep and goats can be a viable weed control option but only in limited locations.

Comment Aerial spraying always hits non-target species. Despite treatment buffers around nests and breeding areas, aerial spraying still could affect these wildlife species via drift and/or if they ingest plant and/or other species that have been affected by herbicides. Non-target vegetation would also be affected.

Response Aerial spraying will apply herbicide to non-target plant species, but that does not necessarily mean those native plant species will be negatively affected. As discussed in the FEIS, imazapic is effective on annual plants at low concentrations when applied as a pre-emergent to control cheatgrass, medusahead, and curveseed butterwort. If applied early spring or fall when most perennials are dormant, it has the most effectiveness on the target annual weeds and the least negative effect upon native species. See the discussion of effects of a trial application of Plateau on native species on the Brush Creek/Hayden District, page 47 of the FEIS.

As discussed in appendix A, protection measures to minimize drift from aerial spraying would be implemented. Buffer zones will be used for aerial and ground-based herbicide application. These zones would vary by application method and risk associated with each herbicide.

As shown in table 2 and figure 2 in the FEIS, selection of treatment methods (including ground-based herbicides) is based on factors such as proximity to sensitive areas, density of the existing infestation, potential damage to other resources, and effectiveness of the proposed treatment. Resource protection measures in appendix A are designed to reduce the likelihood of damage to non-target species.

Comment Sulfometuron methyl appears to be particularly damaging and must not be aerially sprayed anywhere, anytime. And ground-based spraying should only be done in large areas of weed infestation where few native plants remain.

Response The following protection measures (from appendix A) are specific to sulfometuron methyl and apply to federally listed plant species.

- Do not apply by high or low boom ground or aerial methods within 1,500 feet of terrestrial TEP plant species.
- Do not apply by aerial methods within 1,500 feet of aquatic habitats where TEP plant species occur.
- Do not apply by low or high boom ground methods within 900 feet of aquatic habitats where TEP plant species occur,
- In areas where wind erosion is likely, do not apply within ½ mile of TEP plant species.

Response, cont. Appendix A also includes protection measures for sensitive plants if sulfometuron methyl is used:

- Broadcast (boom) applications of sulfometuron methyl are prohibited within 1,500 feet of sensitive plant occurrences. Selective hand spot or wick treatment with this herbicide is allowed within this setback.
- Sulfometuron methyl is prohibited within the 50-foot buffer zone around sensitive plants.

Sulfometuron methyl is registered for aerial application; however, the Forest Service does not currently apply this herbicide aerially (SERA 2004).

Comment The required buffer around aquatic threatened, endangered, and proposed (TEP) aquatic plants for aerial application of imazapic at the typical application rate is insufficient to protect these plants, if any exist near the areas to be aerially sprayed.

Response There are no TEP aquatic plants on the MBRTB.

Comment If aerial spraying is allowed, it must be prohibited in areas dominated by forested cover of any type. Much non-target vegetation, including tree crowns, would receive applications of herbicide and less of the chemical would hit the target weeds on the ground.

Response As noted in table 2, aerial spraying would be emphasized in the following situations:

- For large infestations of weeds that do not have effective biological controls available, especially those in inaccessible or remote areas.
- For infestations in areas of critical habitat where ground application cannot be done safely or effectively.

Aerial spraying of forested sites in order to treat understory weed infestations would be ineffective and would therefore not be done. Incidental aerial spraying of widely scattered trees with Plateau (such as occasional limber pine trees or juniper trees on a cheatgrass-dominated hillside) may occur. Plateau is a pre-emergent and would not affect forested vegetation.

Comment Herbicide spraying may degrade greater sage grouse habitat. Repeated applications of imazapic could result in considerable damage to, or even elimination of, some populations of native plant species needed by sage grouse and other wildlife. Thus the impacts to sage grouse from the proposed action stated in the DEIS (p. 84) are considerably understated.
If cheatgrass has invaded sage grouse habitat, it should be gradually eliminated to the extent possible (and consistent with retaining as much area with native plants as possible) with ground-based methods, which could include herbicide spraying if necessary.

Many areas of weed infestation are concentrated along roads and could be attacked by vehicle-mounted sprayers. Fighting weeds in this manner would ensure that there will be some grasses and forbs remaining for sage grouse reproduction after each treatment.

Response

As mentioned previously, imazapic is most effective on the target annual weeds and is least damaging to native species if applied in early spring or fall when most perennials are dormant.

The effects discussion in the FEIS has been expanded to include more information about greater sage-grouse (see discussion under *Alternative 2, Region 2 sensitive species*).

As noted in the wildlife specialist report (page 76), the largest patches of cheatgrass occur on the TBNG where greater sage-grouse is a management indicator species (MIS). Under current management, cheatgrass has not been treated with herbicides because it is not a Wyoming state-listed noxious weed, and available treatment methods (grazing, hand pulling etc.) have been ineffective in reducing its spread. Without cheatgrass treatment, there would be an expected decline in the quantity and quality of sage-grouse sagebrush habitat on the TBNG. The wildlife report also notes (page 78) that aerial application has only a slight probability of causing adverse effects to individual sage-grouse due to the resource protection measures in appendix A and the product use label restrictions for imazapic.

The wildlife report (page 78) notes that aerial application would improve thousands of acres of sagebrush habitat over the long-term. Cheatgrass and other weeds would be replaced by native grasses, forbs and, eventually, shrubs over time. These changes would increase the quality and quantity of nesting and brood rearing habitat, and, in time, winter habitat. These improvements would help support a more stable sage-grouse population over time.

Comment

Prohibit aerial spraying in wilderness. Weed populations in wilderness likely can be controlled with ground-based methods. Aircraft use over wilderness, other than emergency search and rescue, contradicts the naturalness inherent in wilderness.

Response

Ground-based methods using primitive modes of travel and non-mechanized tools for application are preferred in wilderness to treat target species only. In designated wilderness areas, Regional Forester approval is required for herbicide use and aircraft flying below 2,000 feet above the ground surface. If wilderness objectives cannot be resolved within reason through the use of nonmotorized methods and it is determined that aerial spraying is necessary to meet minimum needs for wilderness protection, the Regional Forester shall specify what use of that equipment is suitable and will have the least lasting impact to the wilderness resource. Use of this equipment will be scheduled to minimize impact on wilderness visitors (Forest Service Manual 2326).

Comment Monitoring is important and must include the results of treatments. The proposed monitoring described at DEIS p. 16 includes only data on the treatments themselves, not on what happens afterward.
Monitoring of the seeding or planting done and the results for at least five years is important to determine what treatments are likely to be successful in what areas against certain invasive plants.

Response Monitoring and surveying are necessary to determine whether treatments are effective and are meeting management objectives. Annual reporting is important and required for program accountability and includes inventorying invasive plant species treated and documenting specifics of each treatment. Monitoring and record-keeping are discussed in chapter 2 in the *Features Common to all Alternatives* section.
Monitoring is also a component of some resource protection measures in appendix A
Monitoring is also a component of some resource protection measures in appendix A
(see pages A-3, A-5, and A-11).

Comment The benefit to lynx and hare is contrived or exaggerated. Treatments, including herbicide use, would supposedly have a beneficial effect on snowshoe hare and red squirrel, the chief and secondary prey, respectively, of the threatened Canada lynx. This seems unlikely, as most of the spraying would occur in the Grasslands and meadows where cheatgrass and other weeds have invaded.
Hares are more likely to be in forested areas at higher elevations, where little spraying is likely to occur. Also, the risk of weed infestation in areas of lynx habitat would exist because of logging and other treatments that disturb the ground. Areas with insect-caused tree mortality that are not treated do not generally have the disturbed soils that would facilitate weed invasion.

Response The BA contains the following discussion on effects of invasive plant management on lynx and hares:

> There is no documentation on the magnitude of effects of non-native invasive plant infestations to lynx habitat in the United States, but there is recognition that once established, non-native plants can spread aggressively and become extremely difficult to control (Ruediger et al. 2000). So there is potential for large-scale impacts and alteration of important habitat characteristics for prey species such as snowshoe hare, red squirrel, and other small mammals.
> Weeds such as diffuse and spotted knapweed (*Centaurea diffusa, C. maculosa*), leafy spurge (*Euphorbia* spp.), dalmation toadflax (*Linaria dalmatica*), and Canada thistle (*Cirsium arvense*) are found in logged areas on the Medicine Bow and Routt national forests, so there is potential to alter prey habitats at both the local and ecosystem scale more so than herbicide treatments at the micro-site level. The risk of infestation is high due to the disturbances created by the recent bark beetle epidemic and the vegetation management that has followed (salvage logging, road side clearing, and fuels treatments adjacent to urban areas).
> In bark beetle areas that have been managed using logging practices, the use of herbicides or other treatments has the potential to maintain or promote habitat

quality for snowshoe hares and red squirrels by reducing the risk that non-native plant species invade and limit the regeneration of aspen and lodgepole pine in the future. This is particularly important since much of the lynx habitat on the MBRNF has been altered by the mountain pine beetle epidemic and is currently in an unsuitable condition with many of the LAUs exceeding the VEG S1 threshold.

We are seeing noxious weeds, primarily thistles, invade beetle-kill pine stands which have not been disturbed and in which the natural pine needle duff layer is intact. Principal species are Canada thistle, musk thistle and bull thistle. The infestations usually start near the stand edges where the stands border riparian areas or shrublands, then spread further into the interior in subsequent years. Since these thistles all have wind-borne seeds, there is no barrier to seed spread even where tree downfall becomes very thick. Before the overstory pines were killed, most of these stands had sparse understory of elk sedge and scattered shade-tolerant native forbs or shrubs. Some of the thistle infestations, particularly Canada thistle, are becoming quite dense, as can be seen in the following photos taken on the Brush Creek/Hayden District.

Large, dense patch of Canada thistle on undisturbed duff layer.

Bull thistle and musk thistle in the foreground and a dense patch of Canada thistle in the background.

Comment Don't aerial spray within several miles of commercial apiaries even with unnamed but "standard" herbicides.

Response Currently, there are no commercial apiaries on the Medicine Bow – Routt National Forests and Thunder Basin National Grassland. This use would require a special use permit, and no one has applied for one.

Comment Don't use newly developed unnamed herbicides without understanding their toxicity to bees.
Choose the formulations least hazardous to bees.
Apply herbicides when bees are not actively foraging, either in the evening or early morning; to not apply when temperatures are expected to be unusually low as residues remain toxic longer.
Contact bee keepers with nearby colonies so they can confine the bees if potential bee losses may occur.

Response As disclosed in the risk assessments done for herbicide use by the Forest Service (SERA 2003-2011), there is evidence that most herbicides are not toxic to honeybees. The botany biological assessment and evaluation includes an expanded analysis of effects to pollinating insects and has an appendix with data on honeybee acute toxicity for each herbicide.

Comment Avoid direct application to flowering weeds.

Response The proposed aerial spraying under alternative 2 will minimize effects to pollinating insects by primarily spraying invasive grasses with selective herbicides, specifically products that are expected to have minimal impact on flowering forbs and other native vegetation. The proposed program will also focus aerial application in the early spring and late fall, when cool-season invasive grass seeds are germinating but most pollinating insects and flowering forbs are inactive.